

June 26, 2001

PSLTR: #01-0072

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Dresden Nuclear Power Station, Unit 3
Facility Operating License No. DPR-25
NRC Docket No. 50-249

Subject: Licensee Event Report 2001-002-00, "Reactor Scram due to due to
Reactor Recirculation Run-up and Trip"

Enclosed is Licensee Event Report 2001-002-00, "Reactor Scram due to Reactor Recirculation Run-up and Trip", for the Dresden Nuclear Power Station (DNPS). This condition is being reported pursuant to 10 CFR 50.73, "License event report system," paragraph (a)(2)(iv)(B), which requires the reporting of any event or condition that resulted in a manual or automatic actuation of the Reactor Protection System (RPS) including reactor scram or reactor trip.

We are continuing to investigate the root cause of this event and expect to issue a supplement to this License Event Report.

The following actions were taken:

Cleaned, inspected, and replaced the 3B reactor recirculation motor generator scoop tube control positioner motor brushes.

This correspondence contains the following new commitments:

Clean, inspect, and replace the 3A reactor recirculation motor generator scoop tube control positioner motor brushes.

Assess the need for and establish preventative maintenance for cleaning, inspecting, and replacing as necessary the reactor recirculation motor generator scoop tube positioner motor brushes.

Revise post maintenance testing for all 4kv vertical lift breakers to include verification of 52H contact continuity.

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Any other actions described in the submittal represent intended or planned actions by DNPS. They are described for the NRC's information and are not regulatory commitments.

If you have any questions, please contact Mr. Dale F. Ambler, Dresden Regulatory Assurance Manager at (815) 416-2800.

Respectfully,

Preston Swafford
Site Vice President
Dresden Nuclear Power Station

A handwritten signature in cursive script, appearing to read "Kenneth Brown for PS", is written over the typed name and title of Preston Swafford.

Enclosure

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Information and Records Management Branch (1-8 133), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office Of Management And Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)

Dresden Nuclear Power Station, Unit 3

DOCKET NUMBER (2)

05000249

PAGE (3)

1 of 3

TITLE (4)

Reactor Scram due to Reactor Recirculation Run-up and Trip

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|-----------------------|-----|------|--|----------------------|--------------------|-------------------|-----|------|-------------------------------|---|
| MON TH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 04 | 27 | 2001 | 2001 | 002 | 00 | 06 | 26 | 2001 | N/A | N/A |
| OPERATING MODE (9) | | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11) | | | | | | | |
| 1 | | | 20.2201(b) | | | 20.2203(a)(2)(v) | | | 50.73(a)(2)(i) | 50.73(a)(2)(viii) |
| POWER LEVEL (10) | | | 20.2203(a)(I) | | | 20.2203(a)(3)(I) | | | 50.73(a)(2)(ii) | 50.73(a)(2)(x) |
| 099 | | | 20.2203(a)(2)(I)) | | | 20.2203(a)(3)(ii) | | | 50.73(a)(2)(iii) | 73.71 |
| | | | 20.2203(a)(2)(ii) | | | 20.2203(a)(4) | | X | 50.73(a)(2)(iv) | OTHER |
| | | | 20.2203(a)(2)(iii) | | | 50.36(c)(1) | | | 50.73(a)(2)(v) | Specify in Abstract below or in NRC Form 366A |
| | | | 20.2203(a)(2)(iv) | | | 50.36(c)(2) | | | 50.73(a)(2)(vii) | |

LICENSEE CONTACT FOR THIS LER (12)

NAME

Timothy P. Heisterman, Regulatory Assurance

TELEPHONE NUMBER (Include Area Code)

(815) 942-2920 Ext. 3324

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|--------------|-----------------------|-------|--------|-----------|--------------|-----------------------|
| | | | | | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

| X | YES | NO | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|--|----|-------------------------------------|-------|-----|------|
| | (If yes, complete EXPECTED SUBMISSION DATE): | | | 12 | 31 | 2001 |

ABSTRACT (Limit to 1400 spaces, i. e., approximately 15 single-spaced typewritten lines) (16)

On April 27, 2001, at 14:49, approximately 10 minutes after a minor Reactor Recirculation (RR) flow increase demand, the 3B RR Motor Generator (MG) increased from 94 percent until it reached its electrical stop for speed control. This runup was due to debris in the RR MG scoop tube positioner motor. This resulted in the RR MG output frequency operating in an unstable region for the RR MG voltage regulator. This caused RR MG output frequency to vary significantly. Several attempts to trip the RR MG were unsuccessful due to the RR MG drive motor breaker logic's (52 H) relay contact not having continuity. The unstable RR MG operation caused its field breaker to trip on high excitation current. Without field excitation, the RR pump was not magnetically coupled to the RR MG's momentum. Therefore, the RR Pump quickly slowed, dynamically braking the 3B RR pump flow. The Reactor Water Level (RWL) increased due to the decrease in RR pump flow resulting in the Feedwater Level Control System (FWLCS) decreasing feedwater flow. A feedwater / steam flow mismatch occurred resulting in a decrease in RWL. RWL reached the automatic scram setpoint and Dresden Unit 3 scrambled on low RWL as designed.

The debris in the RR MG Scoop Tube Positioner Motor has been removed. RR MG operation is not normally permitted in the unstable operating region for the RR MG voltage regulator. The drive motor breaker logic relay 52 H contact has been correctly aligned and verified by post maintenance testing.

The safety significance of this event has been determined to be minimal.

LICENSEE EVENT REPORT (LER)

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

PLANT AND SYSTEM IDENTIFICATION:

General Electric – Boiling Water Reactor – 2527 MWt rated core thermal power
 Energy Industry Identification System (EIS) Codes are identified in the text as [XX] and are obtained from IEEE Standard 805-1984, IEEE Recommended Practice for System Identification in Nuclear Power Plants and Related Facilities.

EVENT IDENTIFICATION:

Reactor Scram due to Reactor Recirculation Run-up and Trip

A. PLANT CONDITIONS PRIOR TO EVENT:

| | | |
|--|----------------------------|------------------|
| Unit: 3 | Event Date: 04-27-2001 | Event Time: 1453 |
| Reactor Mode: 1 | Mode Name: Power Operation | Power Level: 099 |
| Reactor Coolant System Pressure: 1000 psig | | |

B. DESCRIPTION OF EVENT:

This condition is being reported pursuant to 10 CFR 50.73, "License event report system," paragraph (a)(2)(iv)(B), which requires the reporting of any event or condition that resulted in a manual or automatic actuation of the Reactor Protection System (RPS) [JC] including reactor scram or reactor trip.

On April 27, 2001, the reactor was operating at approximately 2524 MWth. The Unit 3 Nuclear Station Operator (NSO) adjusted the reactor recirculation [AD] speed control system master controller to increase reactor core flow and power in accordance with station procedures. This minor change to increase reactor power by 3 MWth should have resulted in no noticeable change in controller indications.

At approximately 14:49 (about 10 minutes following the demand signal), the 3B Reactor Recirculation Motor Generator (RR MG) power output frequency increased. This resulted in its associated pump speed increasing from 94 percent until it reached its electrical stop for speed control. At this time a control room alarm annunciated, indicating RR pump speed mismatch.

The Unit 3 NSO checked the 3B RR pump indication and determined that 3B RR pump percent speed had full-scale indication. In response, the operator locked-out the 3B RR Pump in accordance with station procedures. The operator noted Average Power Range Monitor (APRM) indications at greater than 100 percent of rated thermal power (RTP). Reactor power peaked at just below 106 percent of RPT. The steady state power operation did not exceed 2527 MWth, which is the licensed maximum power level. The NSO attempted to lower reactor power with 3A RR pump speed using the master controller as directed by the station procedure. However, this attempt was unsuccessful due to the speed mismatch circuitry preventing adjustment. The NSO dispatched the Work Execution Center Senior Reactor Operator (SRO) to lower 3B RR pump speed locally.

The 3B RR Pump was operating in an unstable operating region for the RR MG voltage regulator, which caused RR MG output frequency to vary. The unit supervisor directed the unit NSO to trip the 3B RR Pump.

At approximately 14:51, the NSO placed 3B RR MG drive motor breaker in the "Normal After Trip" (NAT) position. The breaker failed to trip as evidenced by instrumentation, which indicated that the pump was still operating. The NSO then placed the 3B MG Set Drive Motor Breaker in the "Pull To Lock" (PTL) position. The breaker remained closed. The unit supervisor then directed the NSO to cycle the breaker switch back to NAT position, then to PTL position. The breaker still indicated closed. The unit supervisor dispatched the auxiliary operator to Bus 32 to manually trip the 3B RR MG motor.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

At 14:52, the 3B RR MG field breaker tripped due to unstable RR MG voltage regulator operation which caused the field breaker to trip on high excitation current. Without field excitation, RR MG momentum was lost and the RR pump slowed which decreased recirculation flow. As a result, indicated Reactor Water Level (RWL) increased. The RPV Level High annunciator was received following the increased in indicated level.

However, the swell due to the tripped RR MG subsided and RWL began to decrease as feedwater flow decreased to lower than steam flow. Therefore, the reactor automatically scrammed on low RWL as designed. Following the automatic scram, the U3 NSO inserted a manual scram by placing the Mode Switch in the shutdown position as directed by procedures. The plant was stabilized in accordance with plant procedures.

C. CAUSE OF EVENT:

The root cause was determined to be foreign material between the brush and commutator of the RR MG scoop tube positioner motor, which produced intermittent failure of the RR MG to respond. When the RR speed control system generates a signal high enough to overcome the electrical resistance of the debris, large signals have been built that cause run-up conditions. (NRC Cause Code X)

However, we are continuing to investigate the root cause of this event and expect to issue a supplement to this license event report.

A contributing factor to this event was the 52 H contact not being properly aligned.

D. SAFETY ANALYSIS

At no time during this series of events was there any risk to the safe operation of the plant or to plant personnel. With exception of the abnormalities causing and contributing to the scram, plant equipment response was as designed and required no operator action. No safety systems were needed to mitigate this event with exception of the RPS actuation.

During the run-up condition reactor power peaked at approximately 106 percent of RTP. The above occurrence is bound by the plant's transient analyses. No fuel thermal limit was challenged during this event. Based upon this evaluation, the safety significance of this event has been determined to be minimal.

E. CORRECTIVE ACTIONS:

Cleaned, inspected, and replaced the 3B reactor recirculation motor generator scoop tube control positioner motor brushes. (Complete)

Clean, inspect, and replace the 3A reactor recirculation motor generator scoop tube control positioner motor brushes (ATI: 50987-10)

Assess the need for and establish preventative maintenance for cleaning, inspecting, and replacing as necessary the RR MG scoop tube positioner motor brushes. (ATI: 50987-07)

Revise post maintenance testing for all 4kv vertical lift breakers to include verification of 52 H contact continuity. (ATI 50987-12)

F. PREVIOUS OCCURRENCES:

None

G. COMPONENT FAILURE DATA:

None